REMARKS/ARGUMENTS

Applicant thanks the Examiner for her careful attention to this application. Claims 1-31 and 63-72 are presently pending. Applicant has amended claims 69 and 70 as set forth herein, and considers all of the pending claims in condition for allowance.

The Examiner has objected to claims 69 and 70 under 37 CFR 1.75 as being a substantial duplicate of claims 66 and 67. The duplication of the claims is the result of a clerical error regarding the intended dependency of claims 69 and 70. Applicant has now amended claims 69 and 70 to depend upon claim 31 instead of claim 21, and therefore respectfully requests that the objection be withdrawn.

The Examiner has rejected claims 1-31, 65, 68 and 72 under 35 U.S.C. Section 103(a) as allegedly being unpatentable over Ditto, U.S. Patent 6,270,352 in view of Boon, U.S. Patent 6,022,221. Applicant believes that the rejections should be withdrawn.

As set forth in claims 1 and 31, Applicant's invention is directed to a learning item sequencing system for optimizing a student's learning speed. Claim 1 recites the limitation, among others, of a novel sequencing algorithm, in which the algorithm sequences the learning items to be presented by associating with a learning item a priority score as a function of the response data collected from prior learning trials and restricts one or more learning items from being presented in at least one learning trial based upon the priority score associated with the learning item. Independent claim 31 discloses similar limitations in the context of a method claim.

In the most recent Office Action, the Examiner states that Ditto "discloses restricting one or more learning items from being presented in at least one learning trial based upon the priority score associated with the learning item." December 31, 2003 Office Action, page 4. Applicant respectfully disagrees with the Examiner's analysis of Ditto's disclosure, as Ditto expressly does not teach restricting one or more learning items from being presented in at least one learning trial. Ditto's system uses biased random selection to increase or decrease the probability that a particular problem will be presented, however the probability is never reduced to zero. In other words, Ditto does not restrict one or more problems from being presented in a learning trial. No matter how low the performance number is in Ditto's system, there is always a chance in Ditto's system that a problem will be presented in any given learning trial. Applicant's invention, in one exemplary embodiment, uses performance data to rank learning items and select the best item for presentation on each learning trial. All other items are ineligible by virtue of their having lower priority scores on that trial. This deterministic selection produces sequences that can optimize numerous laws of learning jointly for the set of items and satisfy important problem retirement criteria. Ditto's system of biased random selection cannot be used predictably to satisfy any of the laws of learning or certain retirement criteria. In Ditto's invention, any item may still be selected on any trial, and "a selected problem does not necessarily mean that the problem had the highest probability of being selected when it was selected." (Ditto, Col. 13, 43-45).

Accordingly, any sequence is still possible. In Ditto's system, a problem with high probability may fail to be selected and a problem with low probability may nevertheless be selected. As biased random selection is intrinsic to Ditto's system, Ditto (Col. 25: 27-45) indicates that his system of biased random sampling is also applicable to lotteries. One cannot have a lottery where the winner is known in advance. Applicant discloses a system different in concept that produces different behavior, via an algorithm that determines the selection of the optimal problem at any given time.

Ditto, therefore, is fundamentally different than Applicant's claimed invention in claims 1 and 31, which uses a deterministic approach that allows for reliable optimization of learning and satisfaction by restricting certain learning items from ever being presented in one or more learning trials based upon the priority score associated with the learning item. Accordingly, Applicant respectfully requests that independent claims 1 and 31 are patentable over the cited art, and respectfully requests that the Examiner withdraw the rejection of those claims, as well as the claims dependent thereon.

Independent claim 21 recites, among other limitations, a trial record database for storing a record containing response data regarding the student's response to each learning item, the response data collected for each learning item including the student's accuracy in answering each learning item and the student's response speed for each correctly answered learning item. Claim 21 further discloses a sequencing algorithm based

upon priority scores, in which the priority scores are determined based on the claimed response data.

The invention set forth in claim 21 is not disclosed or suggested by the relied-upon references. As stated by the examiner, Ditto does not disclose the trial record database recited in claims 1, 21 and 31. The other reference relied upon by the Examiner, Boon, also fails to disclose the claimed inventions. Boon discloses information relating to "level of retention," which refers to the length of time since the last correct answer on a problem. Col. 2, line 66 - col. 3, line 1; col. 4, ll. 31-37; col. 4 lines 52 - col. 5, line 17. Boon does not appear to disclose response data relating to speed and accuracy, as set forth in claims 1, 21 and 31. Further, Boon's system prescribes preset review intervals for a given problem based on elapsed time, a scheme that is directed to achieving Boon's stated objective of providing "a bridge between short and long term memory." E.g., col. 2, lines 32-34. It is not correct that Boon teaches the concept of response data indicating the number of trials since a learning item was last presented (Col. 4: 22-42). Boon's system keeps track of elapsed *time*, not number of trials (Col. 4, 20-23). The same distinctions apply as further grounds for patentability of claims 1 and 31. Accordingly, the rejection of claims 1, 21 and 31, should also be withdrawn.

Regarding Claims 12 and 25, it does not appear to be the case that Boon discloses a sequencing algorithm that prevents the same learning item from recurring for a predetermined number of trials. Recurrence in Boon depends on elapsed time, not

number of trials (Col. 4, 20-23), including time away from learning. Moreover, the preset review intervals in Boon are aimed at keeping information about a particular learning item in short term memory until its next presentation (Col. 4: 27-28; 56-57).

In one embodiment, Applicant's invention includes use of an enforced delay in terms of intervening learning trials, not elapsed time, to eradicate information from short term memory (so that subsequent learning trials require retrieval from long term memory). Removal of information from short term memory depends primarily on interference from new material, not on elapsed time. Boon does not incorporate an enforced delay based on trials of presentation.

In addition, the combination of the relied-upon references is improper. The stated objective of Boon, based upon fixed, preset intervals, appears fundamentally incompatible with Ditto's use of biased random selection, in which one can never be sure of what appears next. For example, neither Ditto nor Boon discloses Applicant's system and algorithm, as set forth in one embodiment of the invention, that combines data about learner's accuracy, speed, and prior appearance of learning items to deterministically select the best item to present next, allowing joint optimization of learning the items in the set. Accordingly, Applicant respectfully submits that it would not have been obvious to combine the teachings of Ditto and Boon to achieve the claimed inventions as set forth in claims 1, 21 and 31, as elements of the claims are not disclosed in either of the references, basic features of the two references are

incompatible, nor is there motivation to combine the references. Hindsight reconstruction of Applicant's invention based upon Applicant's teachings is improper. Accordingly, the rejections of independent claims 1, 21 and 31 should be withdrawn.

Claims 2-20 and 22-30, and 63-72 are also considered in condition for allowance, as they depend upon one of allowable independent claims 1, 21 or 31.

Based on the foregoing, Applicant submits that claims 1-31 and 63-72 are in condition for allowance. Applicant therefore respectfully requests early issuance of a Notice of Allowance.

Respectfully submitted,
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